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EXAMINER

BERHANU, SAMUEL

ART UNIT PAPER NUMBER

2838

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

B5/

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/706,541	RICHTER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Samuel Berhanu	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-8 and 10 are rejected under 35 U.S.C. 101 non- Statutory

because: -

Claims 1-8 do not disclose a useful, concrete and tangible result because it appears that the claims require only a manipulation of a number in a process, with a result as a number. There is no clear indication that even a measurement is required, since the time constant could be calculated from hypothetical temperatures and other battery data from a look up table. Applicant appears to do nothing with the number. It is not even clear that a battery is required. Applicant appears to have discovered a function that describes the charge of a battery and as such is claiming a mere algorithm. Please see citations discussed in the argument section. Similar remarks apply to claim 10.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Mentgen et al. (US 2002/0101243).

Regarding Claim 1, Mentgen et al. disclose in Figure 1, a method for determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an exponential function (Noted that soc is a charging result and one of the weight function is expresses in exponential form, please see formula 1 and 2) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature ( Paragraph 18).

Regarding Claim 2, Mentgen et al. disclose the time constant is also defined as a function of the state of charge at the start of the drawing of the charge (Paragraph 18).

Regarding Claim 3, Mentgen et al. disclose the time constant is also defined as a function of at least one of a charging voltage, a mean charging voltage and a rated charging voltage (Page 1, Paragraph 9)

Regarding Claim 4, Mentgen et al. disclose in Equation 1 and 2 in page 1 paragraphs 6-9, the absolute amount of charge drawn according to the function

$$\Delta Q \approx (1 - e^{-t/\tau}) (Q_0 - Q_s),$$

where  $\Delta Q$  is the absolute amount of charge drawn,  $Q_0$  is the defined rated capacity of the energy storage battery, and  $Q_s$  is the initial charge of the energy storage battery at the start of the drawing of the charge. (Page 1, paragraph 6-7)

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Regarding Claim 5, Mentgen et al. disclose in Equation 1 and 2 in page 1 determining the relative state of charge of the energy storage battery with respect to the rated capacity of the energy storage battery according to the function:

$$Q_t(t)/Q_o \approx 1 - (1 - Q_s/Q_o)^{-t/\tau}$$

where  $Q(t)/Q_o$  is the relative state of charge of the energy storage battery,  $Q_o$  is the rated capacity of the energy storage battery, and  $Q_s$  is the initial charge of the energy storage battery at the start of the drawing of the charge (Page 1, paragraph 6-7).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mentgen et al. (US 2002/0101243) in view of Okda et al. (US 5,949,217).

Regarding Claim 9, Mentgen et al. disclose in Figures 1 and 2, a monitoring device for energy storage batteries comprising: a computation device (22) for determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Page 2, Paragraph 0022); wherein the computation device is desired to carry out a method comprising: a method comprising determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing

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of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an exponential function (Page 1, lines 1-25) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature ( Paragraph 18).

However, Mentgen et al. do not disclose a device for measuring battery temperature.

Okda et al. disclose in Figure 1, a device for measuring battery temperature (Column 3, lines 5-9). It would have been obvious at the time of the invention to a person having ordinary skill in the art to add a temperature measuring means in Mentgen et al. device in order to avoid battery overheating.

5. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mentgen et al. (US 2002/0101243) in view of Hirzel (5,381,096).

Regarding Claim 10, Mentgen et al. disclose in Figure 1, determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an exponential function (Noted that soc is a charging result and one of the weight function is expresses in exponential form, please see formula 1 and 2) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature ( Page 2, Paragraph 18). However,

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Mentgen et al. do not disclose a computer program code designed to carry out a method when the computer program is run using a processor device.

Hirzel discloses in Figure 8, a computer program code designed to carry out a method when the computer program is run using a processor device (Column 3, lines 46-49, Column 10, lines 31- 41). It would have been obvious at the time of the invention to a person having ordinary skill in the art to modify Mentgen et al. device and use a computer program in order to accurately calculates the state of charge of the battery.

Regarding Claim 11, Hirzel discloses in Figure 10, the computer program is a program file stored on a data storage medium (74) (Column 10, lines 31-41).

### ***Response to Arguments***

6. Applicant's arguments filed 01/06/06 have been fully considered but they are not persuasive.

With respect to Claim 1, applicant argues that there is no teaching or suggestion in Mentgen et al." determining the charge drawn as a function of an exponential function with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature " This is incorrect.

Mentgen et al. disclose in Figure 1, a method for determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an

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exponential function (Noted that soc is a charging result and one of the weight function is expresses in exponential form, please see formula 1 and 2) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature ( Noted that the time constant is depend on the battery temperature history, which has a direct or indirect relation with the battery type and temperature, Paragraph 18).

For Claim 9, in response to applicant's argument that Mentgen et al. alone or in combination with Okada et al. does not disclose, teach or suggest a "computation device" that is "designed to carry out a method comprising: determining the charge drawn as a function of exponential function with a time constant, wherein the time constant is defined t least a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature." This is in correct Mentgen et al. disclose that calculating the battery charge status by using an exponential formulas which includes a time constant as parameter. Since Mengen et al. do not disclose explicitly "a device for measuring battery temperature" examiner relied up on the secondary reference, Okada et al., to show "a device for measuring battery temperature" as claimed. (Please see paragraph 4, above), the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references



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would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Further, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

With respect to Claim 10, applicant argues that Mentgen et al. alone or in any proper combination with Hizel does not disclose, teach or suggest a "computer program code" that is "designed to carry out a method" that includes "determining the charge drawn In Regarding Claim 10, Mentgen et al. disclose in Figure 1, determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an exponential function (Noted that soc is a charging result and one of the weight function is expresses in exponential form, please see formula 1 and 2) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of at least one of the battery temperature and the electrolyte temperature ( Page 2, Paragraph 18). However, Mentgen et al. do not disclose a computer program code designed to carry out a method when the computer program is run using a

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processor device. Hirzel discloses in Figure 8, a computer program code designed to carry out a method when the computer program is run using a processor device (Column 3, lines 46-49, Column 10, lines 31- 41). It would have been obvious at the time of the invention to a person having ordinary skill in the art to modify Mentgen et al. device and use a computer program in order to accurately calculates the state of charge of the battery.

Applicant argues that claims 1 and 10, produce a tangible result –the charge drawn by an energy storage battery. This is incorrect.

There is no physical transformation appearing in the claim; the only result is a number calculated by a formula, this is not tangible. Please see the remarks in the rejection. The applicant respectfully directed to the following portions of the 101 Statutory “ Guidelines “ noted by the applicant.

Practical Application That Produces a Useful, Concrete, and Tangible Result

(2) "TANGIBLE RESULT"

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a Sec. 101 judicial exception, in that the process claim must set forth a practical application of that Sec. 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application."). Even when a claim applies a mathematical formula, for example, as part of a seemingly patentable process, the examiner must ensure that it does not in reality "seek patent protection for that formula in the abstract."

(3). Determine Whether the Claimed Invention Preempts an Abstract Idea, Law of Nature, or Natural Phenomenon (Sec. 101 Judicial Exceptions)

Even when a claim applies a mathematical formula, for example, as part of a seemingly patentable process, the examiner must ensure that it does not in reality "seek [ ] patent protection for that formula in the abstract." Diehr, 450 U.S. at 191, 209 USPQ at 10. "Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."

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Benson, 409 U.S. at 67, 175 USPQ at 675. One may not patent a process that comprises every "substantial practical application" of an abstract idea, because such a patent "in practical effect would be a patent on the [abstract idea] itself." Benson, 409 U.S. at 71-72, 175 USPQ at 676; cf. Diehr, 450 U.S. at 187, 209 USPQ at 8 (stressing that the patent applicants in that case did "not seek to pre-empt the use of [an] equation," but instead sought only to "foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process"). "To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection." Diehr, 450 U.S. at 192, 209 USPQ at 10. Thus, a claim that recites a computer that solely calculates a mathematical formula (see Benson) or a computer disk that solely stores a mathematical formula is not directed to the type of subject matter eligible for patent protection. If an examiner determines that the claimed invention preempts a Sec. 101 judicial exception, the examiner must identify the abstraction, law of nature, or natural phenomenon and explain why the claim covers every substantial practical application thereof.

Case Law Defining the Line Between  
Eligible and Ineligible Subject Matter

A. Supreme Court

i. "Anything Under the Sun That Is Made by Man"

A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. Sec. 101. To be statutory, a claimed process must either: (A) result in a physical transformation for which a practical application is either disclosed in the specification or would have been known to a skilled artisan, or (B) be limited to a practical application which produces a useful, tangible, and concrete result. See Diehr, 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)) ("A [statutory] process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing . . . . The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."). See also *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting Diehr, 450 U.S. at 192, [209 USPQ at 10]). See also *id.* at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly*, 56 U.S. (15 How.) at 114-19).

B. Federal Circuit

iv. *Schrader* and *Grams* distinguished

In re *Grams* [888 F.2d 835, 12 USPQ2d 1824 (Fed. Cir. 1989)] is unhelpful because the panel in that case did not ascertain if the end result of the claimed process was useful, concrete, and tangible. Similarly, the court in In re *Schrader* [22 F.3d 290, 30 USPQ2d 1455 (Fed. Cir. 1994)]

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relied on the Freeman-Walter-Abele test for its analysis of the method claim involved. The court found neither a physical transformation nor any physical step in the claimed process aside from the entering of data into a record. See 22 F.3d at 294, 30 USPQ2d at 1458. The Schrader court likened the data-recording step to that of data-gathering and held that the claim was properly rejected as failing to define patentable subject matter. See *id.* at 294, 296, 30 USPQ2d at 1458-59. The focus of the court in Schrader was not on whether the mathematical algorithm was applied in a practical manner since it ended its inquiry before looking to see if a useful, concrete, tangible result ensued. Thus, in light of our recent understanding of the issue, the Schrader court's analysis is as unhelpful as that of *In re Grams*.

### ANNEX III

#### Improper Tests For Subject Matter Eligibility

##### b. Freeman-Walter-Abele Test

The Federal Circuit further stated "after *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers and storing numbers, in and of itself, would not render it nonstatutory . . . ." *State Street*, 149 F.3d at 1374, 47 USPQ2d at 1602 (citing *In re Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557). The Federal Circuit in an en banc decision pointed out that "the ultimate issue always has been whether the claim as a whole is drawn to statutory subject matter." *Alappat*, 33 F.3d at 1543 n. 21, 31 USPQ2d at 1557 n. 21.

##### d. Machine Implemented Test

The Federal Circuit held that the mere manipulations of abstract ideas are not patentable. *Schrader*, 22 F.3d at 292-93, 30 USPQ2d at 1457-58. If a claimed process manipulates only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the claim is not being applied to appropriate subject matter. *Schrader*, 22 F.3d at 294-95, 30 USPQ2d at 1458-59. The Federal Circuit also recognizes that the fact that a nonstatutory method is carried out on a programmed computer does not make the process claim statutory. *Grams*, 888 F.2d at 841, 12 USPQ2d at 1829 (claim 16 ruled nonstatutory even though it was a computer-implemented process).

In addition, the Federal Circuit has recently noted that a "structural inquiry is unnecessary" when determining whether a process claim is eligible for patent protection. *AT&T*, 172 F.3d at 1359, 50 USPQ2d at 1452.

##### e. Per Se Data Transformation Test

Identifying that a claim transforms data from one value to another is not by itself sufficient for establishing that the claim is eligible for patent protection. See, e.g., *Benson*, 409 U.S. 63, 175 USPQ 673 (finding machine-implemented method of converting binary-coded decimal numbers into pure binary numbers unpatentable). In *Benson*, the claims invention was held to be merely a series of mathematical calculations having "no substantial practical

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application." Id. at 71, 175 USPQ at 676. Therefore, claims that perform data transformation must still be examined for whether there is a practical application of an abstract idea that produces a useful, concrete, and tangible result. Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S.(15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

#### ANNEX IV

##### Computer-Related Nonstatutory Subject Matter

##### (c) Electro-Magnetic Signals

First, a claimed signal is clearly not a "process" under Sec. 101 because it is not a series of steps. The other three Sec. 101 classes of machine, compositions of matter and manufactures "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." 1 D. Chisum, Patents Sec. 1.02 (1994). The three product classes have traditionally required physical structure or material.

Therefore the 101 statutory rejection is maintained. Primarily, the process claims recite at most a physical characteristic (amount of charge ) of a form of energy (charge). That is applicant argues to only manipulate data, such as data existing in a table of predicted temperatures, or is only claiming an algorithm or formula.

#### **Conclusion**

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is

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filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Berhanu whose telephone number is 571-272-8430. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KARL EASTHOM  
SUPERVISORY PATENT EXAMINER